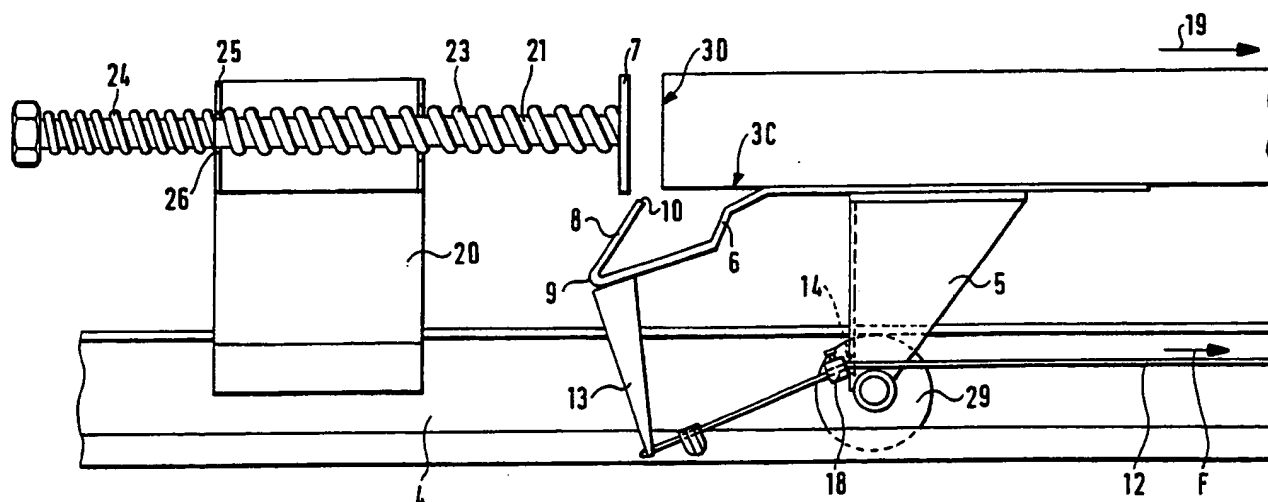


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>4</sup> :</b>  <b>E05C 17/00, E05F 5/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 88/ 01000</b>  <b>(43) International Publication Date:</b> 11 February 1988 (11.02.88)
<p><b>(21) International Application Number:</b> PCT/SE87/00352</p> <p><b>(22) International Filing Date:</b> 5 August 1987 (05.08.87)</p> <p><b>(31) Priority Application Number:</b> 8603340-4</p> <p><b>(32) Priority Date:</b> 7 August 1986 (07.08.86)</p> <p><b>(33) Priority Country:</b> SE</p> <p><b>(71) Applicant (for all designated States except US):</b> CRAWFORD DOOR PRODUCTION AB [SE/SE]; Box 160, S-423 01 Torslanda (SE).</p> <p><b>(72) Inventor; and</b>  <b>(75) Inventor/Applicant (for US only) :</b> BENGTTSSON, Fred [SE/SE]; Kyrkås trappor 3, S-433 31 Partille (SE).</p> <p><b>(74) Agent:</b> LINDBERG, Bo; Cederbom &amp; Lindberg AB, Box 53252, S-400 16 Göteborg (SE).</p>		<p><b>(81) Designated States:</b> AT, AT (European patent), AU, BB, BE (European patent), BG, BR, CH, CH (European patent), DE, DE (Utility model), DE (European patent), DK, FI, FR (European patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SU, US.</p> <p><b>Published</b>  <i>With international search report.</i>  <i>With amended claims.</i>  <i>In English translation (filed in Swedish).</i></p>

(54) Title: COVERING ELEMENT WITH SHOCK ABSORBER DAMPING



## (57) Abstract

An arrangement (1) for a door element or similar covering element (3) capable of interacting with shock absorbers, which element is capable of being displaced respectively between a raised and a lowered position. The arrangement (1) permits the simple operation of the door element (3), at the same time as which the reliable retention of same in the raised position is guaranteed. An arrester device (6) attached to the door element (3) is so arranged as to be capable of entering into engagement with said shock absorber (1) for the purpose of retaining the element (3) in question in position in its upper position, in addition to which means are provided for causing said arrester device (6) and shock absorber (1) to move into engagement with one another, and for causing same to move out of engagement with one another.

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Covering element with shock absorber damping

The present invention relates to an arrangement for a door element or similar covering element capable of interacting with a shock absorber, which element is capable of being displaced respectively between a raised and a lowered position.

The principal object of the present invention is, in the first place, to make available an arrangement of the kind indicated above, which makes it possible effectively and reliably to retain a door element, etc., in its raised opening position, and which is simple to operate.

Said object is achieved by means of an arrangement in accordance with the present invention, which is characterized essentially in that an arrester device attached to the door element is so arranged as to be capable of entering into engagement with said shock absorber for the purpose of retaining the element in question in position in its upper position, and in that means are provided for causing said arrester device and shock absorber to move into engagement with one another, and for causing same to move out of engagement with one another.

The invention is described below as a preferred illustrative embodiment, in conjunction with which reference is made to the accompanying drawings, in which

Fig. 1 illustrates the invention applied to a door element, which door element is illustrated in the open position in interaction with an arrangement in accordance with the invention;

Fig. 2 illustrates the door element in the lowered, closed position;

Fig. 3 illustrates the arrangement in schematic form in the open position of a partially illustrated door;

Fig. 4 illustrates the door and the arrangement during retardation of the door in the open position;

Fig. 5 illustrates the door and the arrangement during its recoil movement;

Fig. 6 illustrates the door and the engaged

arrangement in their open rest position; and

Fig. 7 illustrates the door and the arrangement during the closing phase of the door.

Illustrated in the drawings is a shock absorber arrangement 1, as intended in accordance with the present invention, applied to a door 2, which comprises a door element 3 made from a number of panel-shaped sections 3A, 3B, etc., which door element is guided by guide tracks 4 situated on either side of the intended path of movement A of the door, in which tracks there run guide rollers 29 attached to the door element 3 and supported by roller holders 5, which rollers are capable of being displaced between a raised open position I and a lowered closed position II. The door 2 is preferably of the kind in which the door element is capable of being actuated by spring devices, so that it endeavours automatically to adopt a so-called neutral position. The invention can, of course, be applied to other types of covering element of a similar kind.

A shock absorber arrangement 1 comprises an arrester device attached to the door element 3, etc., which arrester device is conveniently in the form of a sprung hook 6 supported by one of the upper sections 3A of the door element and securely screwed or in some other way attached to the inside 3C of the element 3. Said arrester device 6 is so arranged as to be capable of entering into engagement with a part 7 of said shock absorber arrangement 1 acting as a stop for the purpose of the reliable retention of the door element 3 in its raised open position I.

In order to permit the automatic engagement of the arrester device 6 with said stop part 7, the part 8 of the arrester device which faces the shock absorber 1 and is capable of interacting with same may be wedge-shaped or otherwise executed so as to be inclined in a direction away from its front surface 9 towards said element 3.

The rear part 10 of the hook of the arrester device is executed in such a way as to enter into engagement with the stop part 7 as the element 3 is returned to its lowered

position II, and the hook 6 is still present in its door arresting position III, as illustrated in Fig. 6, for example. These are the means provided in the arrangement 1 for the purpose of causing the preferably hook-shaped arrester device 6 and the shock absorber 1 to be displaced into engagement with one another, although means 11 are also provided by means of which the arrester device 6 and the shock absorber part 7 can be released from engagement with one another. Said release means 11 may conveniently comprise an actuating cable 12 or some other suitable pulling device, one end 12A of which is attached to a bracket 13, which is in contact with the front, moving end 9 of the arrester device 6, projecting laterally from the intended path of movement A of the door element. The other end 12B of the actuating cable may constitute the lowering device for the door element 3 or may be attached to a separate or other pulling device which functions as a lowering means for the door element 3 or for operating same in some other way.

Said actuating cable 12, etc., extends through a suitable opening 14 in the respective roller holder 5 as far as the easily reached level of a door opening 15 along at least one guide track 4, so that the cable can be reached by a person who wishes to pull the door element 3 down manually from its open position I. A stop 16 of a suitable kind, which may consist of a sleeve 18 threaded onto the cable 12 and capable of being displaced along the cable 12 to a desired adjustment position and capable of being locked to the cable 12 by means of a stop screw 17, may be capable of being attached to the cable 12. Said stop 16 exhibits at least one widened part, the width of which exceeds the width of said cable opening 14.

The arrester device 6 is permitted by its inclined part 8 to slide against the stop part 7, for example at its lower end 7A, during the final phase of the raising of the element. The arrester device 6 is permitted in this way to flex out of the way of the stop part 7 as it passes same, and, as it passes the end of same, to flex back inwards towards the element 3 and into a position in which it engages around the stop part 7 so as to

restrain the door element 3 in its open position I. In this open position I the door element 3 is effectively restrained in its raised position without the risk of falling unintentionally and being damaged and/or of injuring individuals and/or of damaging objects near the door 2.

In order to be able to pull down the door element 3 towards its lowered position II, in which the element 3 fills the door opening 15, it is first necessary to pull manually on the cable 12 at its lower end 12B, so that the arrester device 6 flexes out of the way of the stop part 7, and the door element 3 can be pulled down towards its closed position II in the direction of the arrow 19. Thanks to the presence of the stop 16, and due to it having been adjusted to the correct distance from the stop device so that the stop part 7 and the arrester device 6 can pass one another, the pulling force F necessary in order to pull down the door element 3 is prevented from being transferred to the arrester device 6, with the associated risk of causing damage to same, and the pulling force f applied to the cable 12 is transferred to the top roller holder 5 of the door, when the stop 16 is unable to pass through the opening 14 of said holder, as illustrated in Fig. 7.

The shock absorber 1 also comprises a rod 21 capable of moving in relation to a bracket 20 attached to a guide track 4, for example, which rod exhibits conveniently at its respective ends 21A, 21B stops 7 and 22 which may be fixed or may be adjustable to a desired position. The stop 7, which may be comprised in said shock absorber part, and which, for example, may have the form of a plate, is so arranged as to be capable of interacting with a door element 3 in question, conveniently with its outer end surface 3D.

A shock absorber spring 23 and a recoil spring 24 functioning respectively as a shock absorber and as a recoil damper are threaded onto said shock absorber rod 21 and are so arranged as to act between the stops 7 and 22 acting as stops and a common spring stop 25 attached to the bracket. The rod 21 is introduced through a suitable opening 26 in said stop 25 so that

the rod 21 can be displaced relative to the stop 25 in the direction of the arrows 27 and 28, depending on which of the springs 23, 24 is acting on the rod 21.

The shock absorber 1 is conveniently so arranged  
5 that said springs 23, 24 remain unactuated, that is to say that they are not actuated by any movement or force originating from the door element 3 in the position in which the door element 3 is in its raised, open position I, as illustrated in Fig. 6, and in which the element 3 and the arrester device 6 are in their  
10 engagement position with the shock absorber 7, 1.

A shock absorber 1 is conveniently mounted at the end 4A of the respective tracks 4, but is conveniently the only shock absorber 1 so arranged as to be capable of interacting with an arrester device 6 which is supported by the door element 3 in  
15 the manner indicated above.

The function of the arrangement should have been appreciated from its design, although it may be described briefly as follows: when the door element 3 is opened in a previously disclosed manner, as illustrated in Fig. 3, the top section 3A of  
20 the door strikes the shock absorber plate 7, and the arrester spring 6 is caused to be deflected downwards following contact with the plate 7, enabling the latter to pass the hook part 10 of the arrester spring. Depending on the rate of raising and on the mass of the door element 3, the shock absorber spring 23 is  
25 compressed to a varying degree, as illustrated in Fig. 4. Recoil then occurs in the arrangement 1, which recoil is restricted by the recoil damper spring 24, see Fig. 5. The door element 3 remains attached to the shock absorber 1 during this period by means of the parts 6, 7, so that it is prevented from sliding down  
30 from its open position I. When, as has already been mentioned, the door element 3 is in its fully open position, as illustrated in Fig. 6, neither of the two helical pressure-generating damper springs 23, 24 is actuated.

Release of the door element 3 for the purpose of  
35 lowering same into its closed position II takes place by pulling on the lowering cable 12. In this case the flexing part of the

arrester spring is first caused to flex downwards so that the parts 6, 7 move out of engagement with one another, whereupon the downward pulling force is transmitted in its entirety to the door element 3 thanks to the presence of said stop and its interaction with the roller holder 5.

The invention is not restricted to the illustrative embodiment described above and illustrated in the drawings, but may be modified within the scope of the Patent Claims without departing from the idea of invention.

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P a t e n t   C l a i m s

1. Arrangement for a door element or similar covering element (3) capable of interacting with a shock absorber (1),  
5 which element is capable of being displaced respectively between a raised (I) and a lowered (II) position, characterized in that an arrester device (6) attached to the door element (3) is so arranged as to be capable of entering into engagement with said shock absorber (1) for the purpose of retaining the element (3) in  
10 question in position in its upper position (I), and in that means (8; 12) are provided for causing said arrester device (6) and shock absorber (1) to move into engagement with one another, and for causing same to move out of engagement with one another.

2. Arrangement according to Patent Claim 1, characterized  
15 in that the arrester device (6), which is supported by the upper section (3A) of the element, is flexibly suspended thereon so as to be permitted to flex out of the way as it passes a shock absorber part (7) acting as a stop.

3. Arrangement according to Patent Claim 2, characterized  
20 in that the arrester device (6) exhibits a wedge-shaped or otherwise executed part (8), which is so arranged as to slide against said shock absorber part (7) acting as a stop during the final phase of the raising of the element.

4. Arrangement according to either of the Patent  
25 Claims 2-3, characterized in that the arrester device (6) is in the form of a sprung hook attached to the door element (3), etc., the part (8) of which hook facing the shock absorber (1) is inclined in a direction away from its front surface towards the element (3), and in that the rear part (10) of the hook is so  
30 arranged as to enter into engagement with the stop (7) as the element is returned to its lowered position (II).

5. Arrangement according to any of the Patent Claims  
2-4, characterized in that the arrester device (6) is attached via an actuating cable (12), etc., to a lowering device  
35 (12B) arranged for the operation of the door, etc.

6. Arrangement according to Patent Claim 5, characterized

a c t e r i z e d in that the actuating cable (12) is connected to the arrester device (6) via a bracket (13) situated to one side of the path of movement (A) of the door element and projecting at its front, moving end (9).

5 7. Arrangement according to either of the Patent Claims 5-6, characterized in that a stop (16) capable of being attached to the actuating cable (12) is so arranged as to be capable of interacting with a roller holder (5) connected to an element (3) in question.

10 8. Arrangement according to any of the above-  
indicated Patent Claims, characterized in that the shock absorber (1) comprises a rod (21) capable of moving in relation to a bracket (20), which rod exhibits an arrester stop (7) which interacts respectively with a door element (3) and with the  
15 arrester device (6).

9. Arrangement according to Patent Claim 8, characterized in that a shock absorber spring (23) and a recoil spring (24) are fitted onto said shock absorber rod (21) and are so arranged as to act between stops (7, 22) on the rod (21) and a  
20 spring stop (25) attached to the bracket (20).

10. Arrangement according to Patent Claim 9, characterized in that the shock absorber (1) is so arranged that said springs (23, 24) remain unactuated in the position in which the door element (3), etc., is in the raised position (I) and the  
25 element (3) and the arrester device (6) are in the engagement position with the damper (1).

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## AMENDED CLAIMS

[received by International Bureau on 4 December 1987 (04.12.87)  
original claims 1-10 replaced by amended claims 1-10 (2 pages)]

1. Arrangement for a door element or similar covering element (3) capable of interacting with a shock absorber (1), which element is capable of being displaced between a raised position (I) and a lowered position (II), respectively, and including an arrester device (6) attached to the door element for the purpose of retaining the element (3) in raised position (I), c h a r a c t e r i z e d in that the arrester device (6) is capable of interacting with the shock absorber (1) for the purpose of being moved into engagement with the same and to be in engagement with the same, and that the  
5 arrester device (6) is attached to a lowering device (12B) arranged for the operation of the arrester device (6) and the door element etc (3) for causing the same to move out of engagement from each other and the door element (3) to move down against its lowered position (II).
- 15 2. Arrangement according to Patent Claim 1, c h a r - a c t e r i z e d in that the arrester device (6), which is supported by the upper section (3A) of the element, is flexibly suspended thereon so as to be permitted to flex out of the way as it passes a shock absorber part (7) acting as a stop.
- 20 3. Arrangement according to Patent Claim 2, c h a r - a c t e r i z e d in that the arrester device (6) exhibits a wedge-shaped or otherwise executed part (8), which is so arranged as to slide against said shock absorber part (7) acting as a stop during the final phase of the raising of the element.
- 25 4. Arrangement according to either of the Patent Claims 2-3, c h a r a c t e r i z e d in that the arrester device (6) is in the form of a sprung hook attached to the door element (3), etc., the part (8) of which hook facing the shock absorber (1) is inclined in a direction away from its front surface towards the  
30 element (3), and in that the rear part (10) of the hook is so arranged as to enter into engagement with the stop (7) as the element is returned to its lowered position (II).
5. Arrangement according to any of the Patent Claims 2-4, c h a r a c t e r i z e d in that the arrester device (6)  
35 is attached via an actuating cable (12), ect., to the lowering

device (12B).

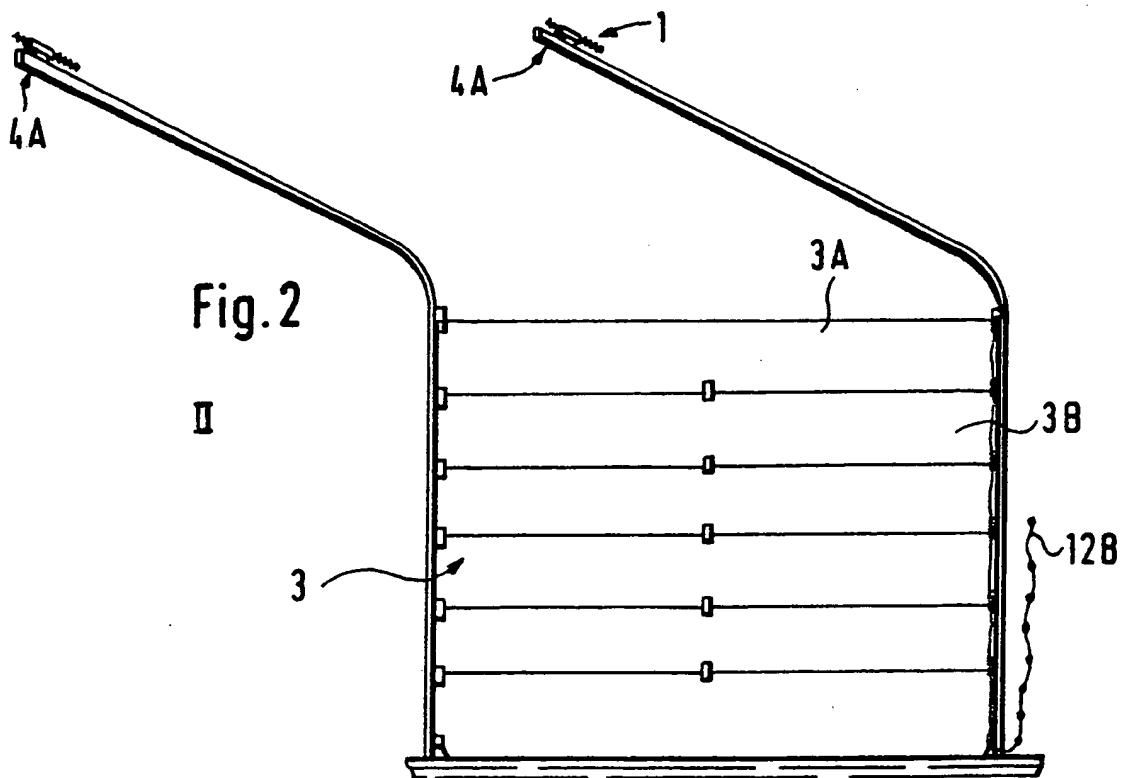
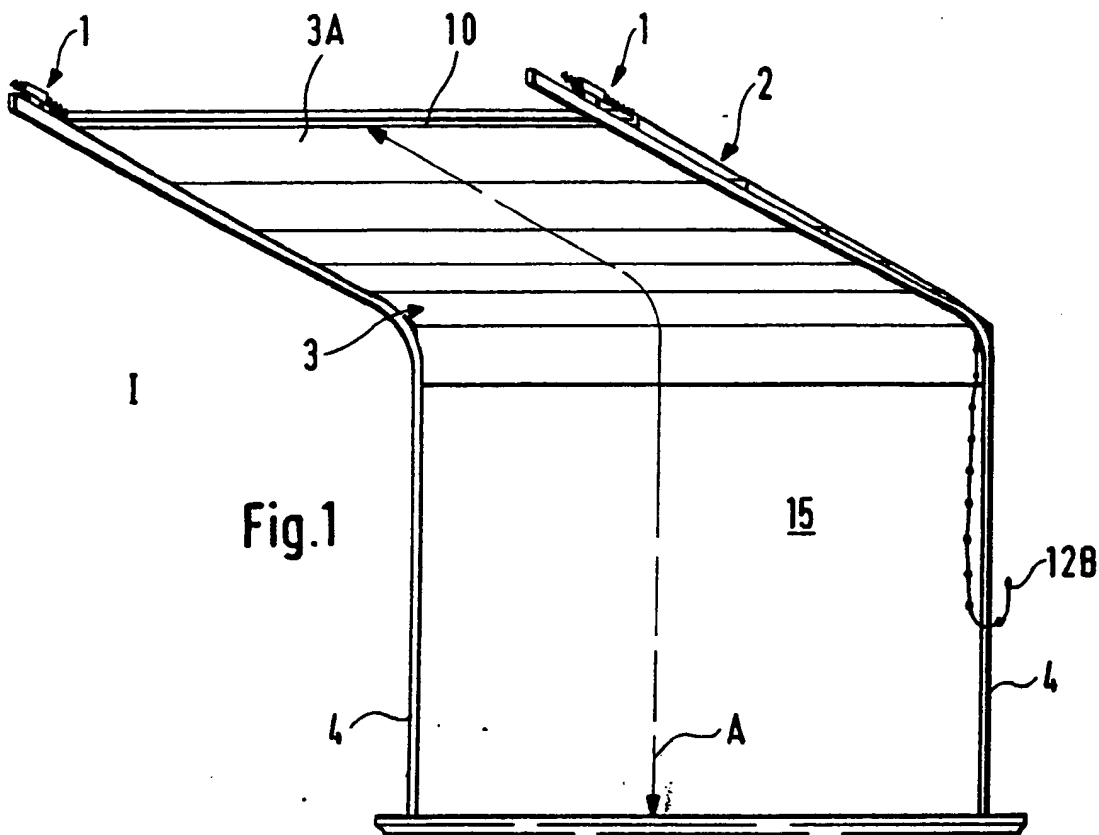
6. Arrangement according to Patent Claim 5, characterized in that the actuating cable (12) is connected to the arrester device (6) via a bracket (13) situated to one side of the path of movement (A) of the door element and projecting at its front, moving end (9).

7. Arrangement according to either of the Patent Claims 5-6, characterized in that a stop (16) capable of being attached to the actuating cable (12) is so arranged as to be capable of interacting with a roller holder (5) connected to an element (3) in question.

8. Arrangement according to any of the above-indicated Patent Claims, characterized in that the shock absorber (1) comprises a rod (21) capable of moving in relation to a bracket (20), which rod exhibits an arrester stop (7) which interacts respectively with a door element (3) and with the arrester device (6).

9. Arrangement according to Patent Claim 8, characterized in that a shock absorber spring (23) and a recoil spring (24) are fitted onto said shock absorber rod (21) and are so arranged as to act between stops (7, 22) on the rod (21) and a spring stop (25) attached to the bracket (20).

10. Arrangement according to Patent Claim 9, characterized in that the shock absorber (1) is so arranged that said springs (23, 24) remain unactuated in the position in which the door element (3), etc., is in the raised position (I) and the element (3) and the arrester device (6) are in the engagement position with the damper (1).



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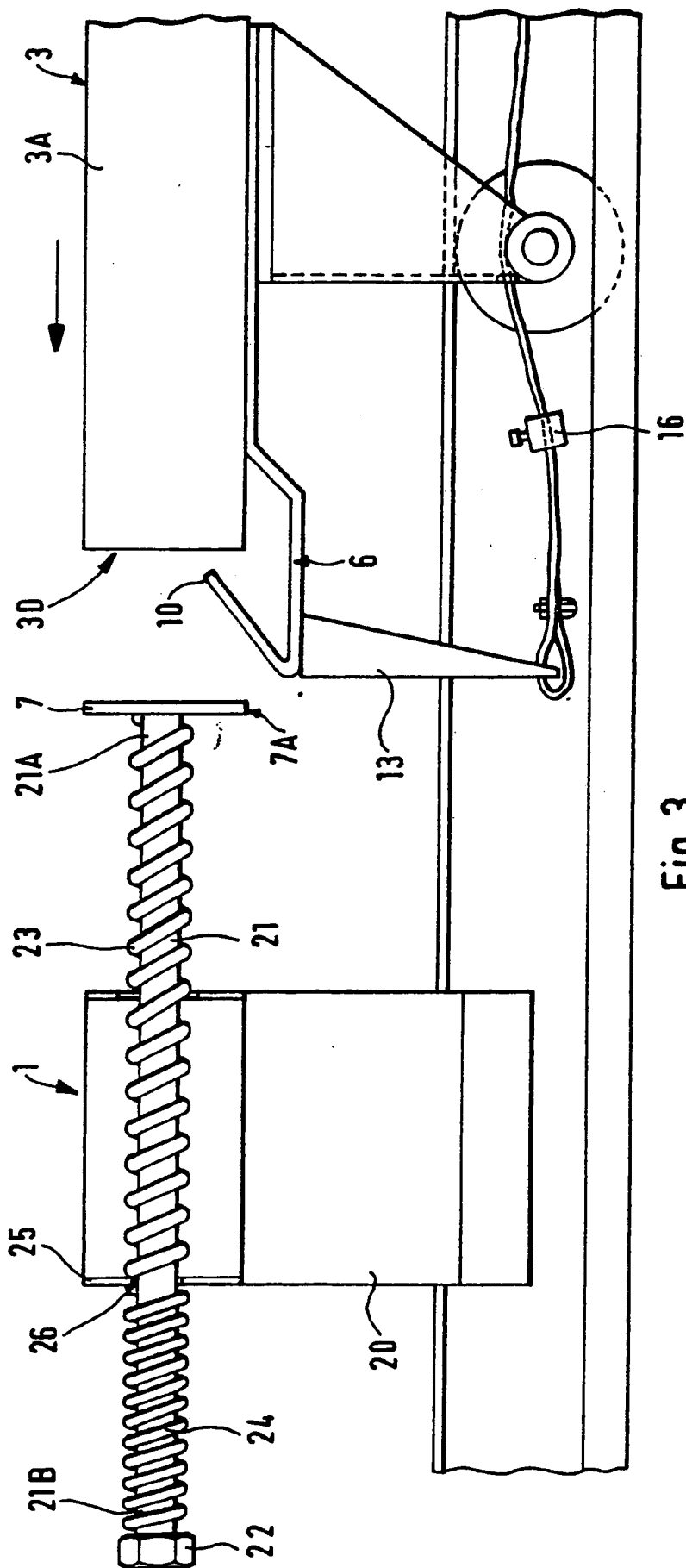


Fig. 3

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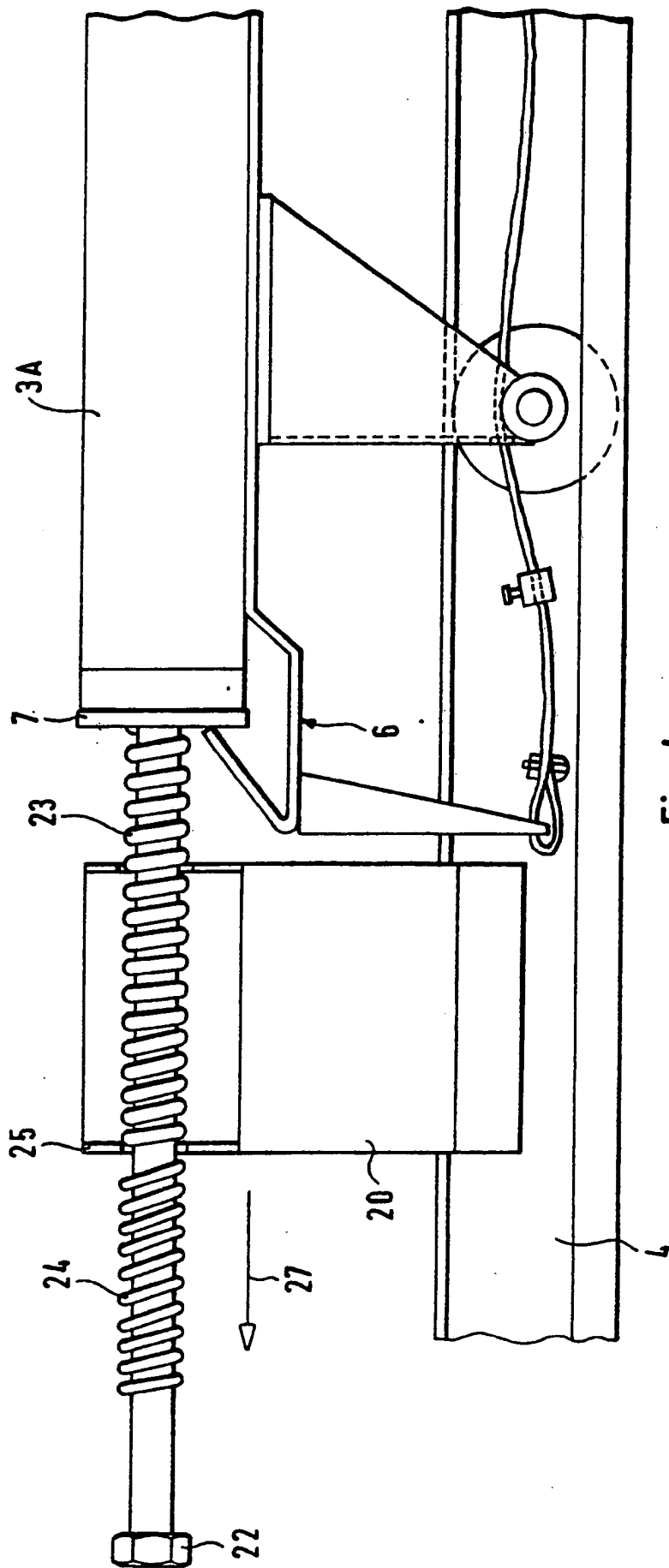
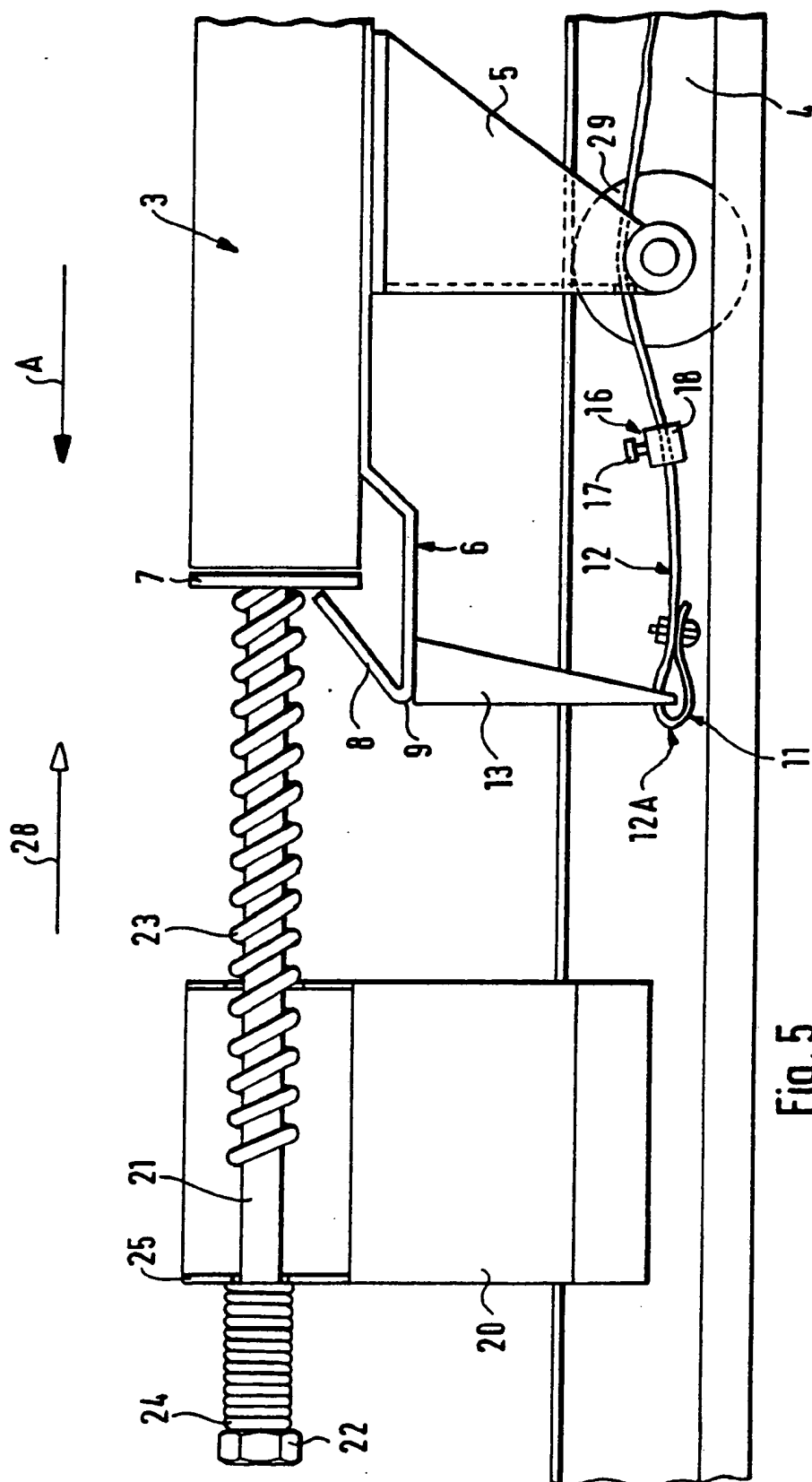


Fig. 4



**Fig. 5**



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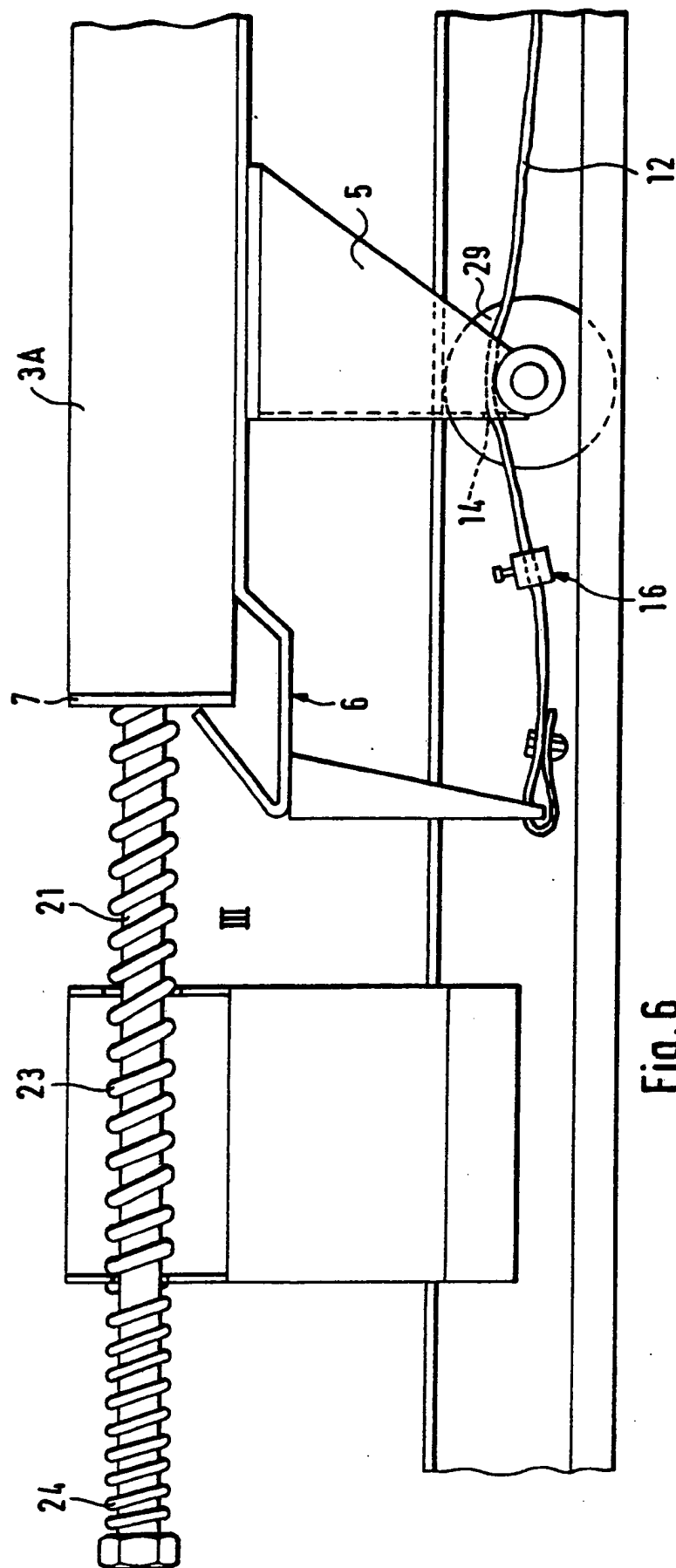
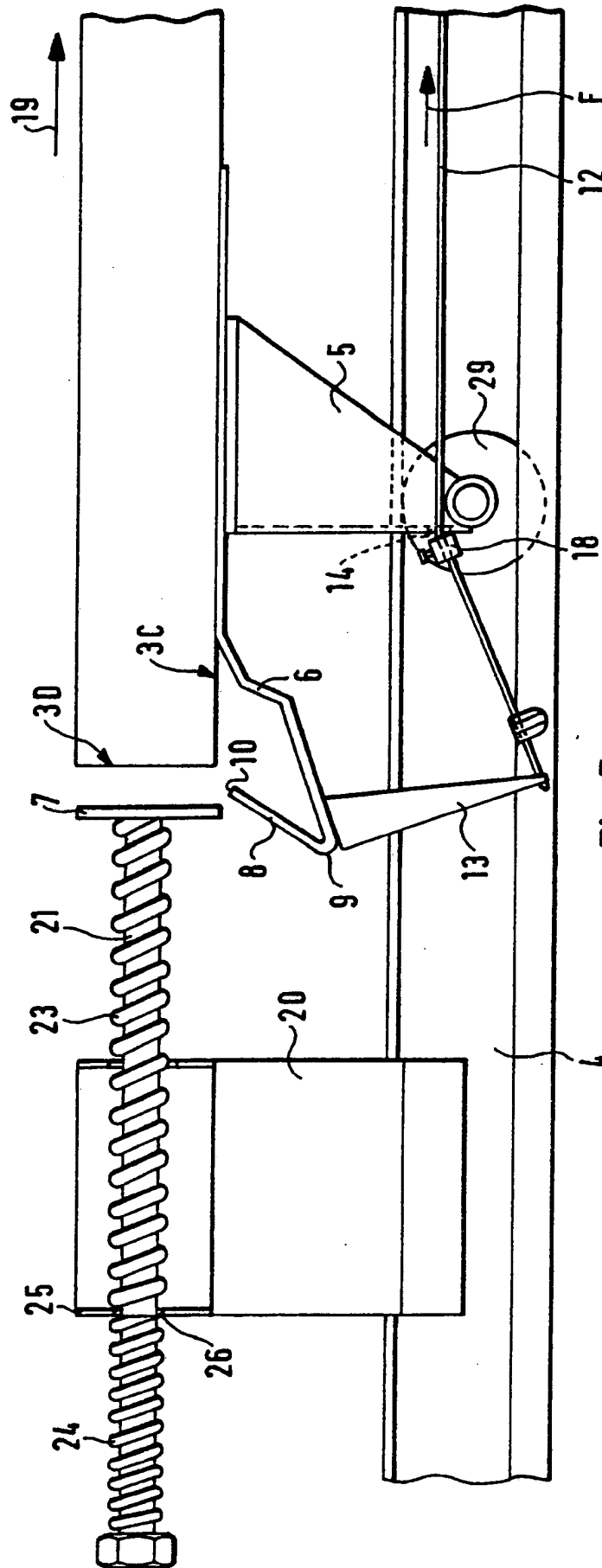


Fig. 6

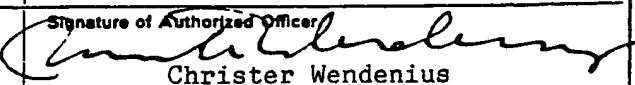
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**Fig. 7.**

# INTERNATIONAL SEARCH REPORT

International Application No PCT/SE87/00352

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
E 05 C 17/00, E 05 F 5/00		
<b>II. FIELDS SEARCHED</b>		
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Classification System	Classification Symbols	
IPC 4	E 05 C 17/00, /02, /46-/52, /58-/64; E 05 F 5/00-/10, 11/04-/06	
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Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13
Y	DE, A1, 3 326 923 (HUBERT) 7 February 1985	1-10
Y	US, A, 3 243 836 (REISS) 5 April 1966	1-4, 10
Y	FR, A, 2 267 439 (FILLIAT) 7 November 1975	1-4, 10
Y	EP, A1, 0 155 880 (FLAMAND) 25 September 1985 & FR, 2560627	1-4
Y	US, A, 3 191 978 (SCRUGGS) 29 June 1965	1-7
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